

FIG. 1

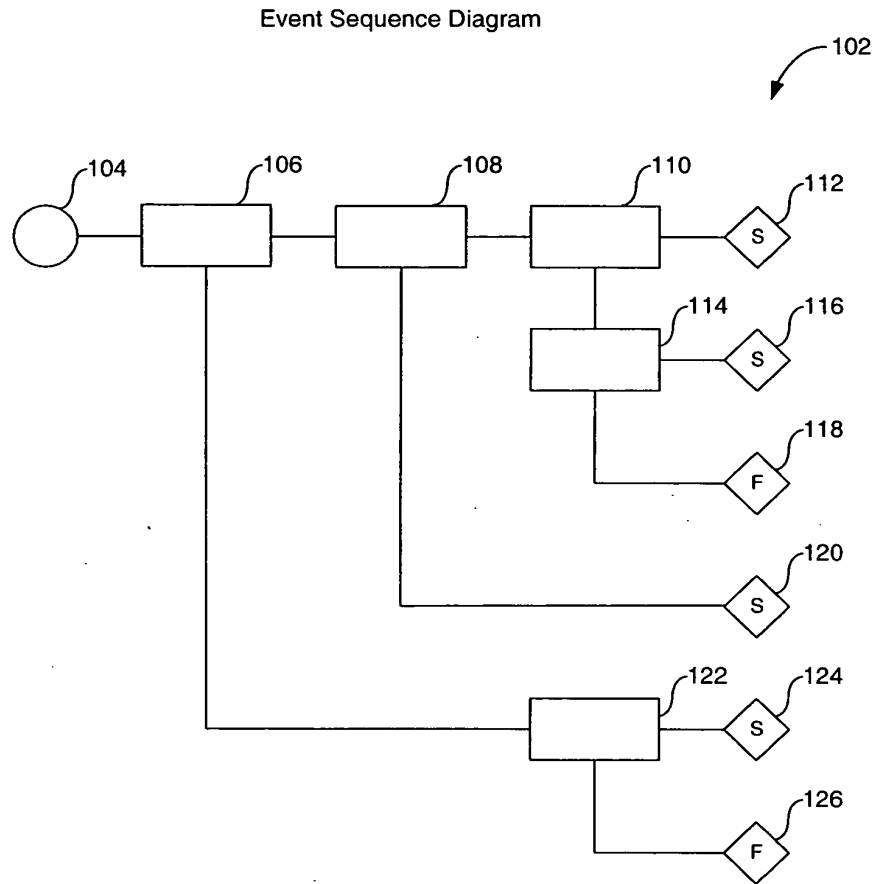


FIG. 1
(Conventional)

Fault Trees

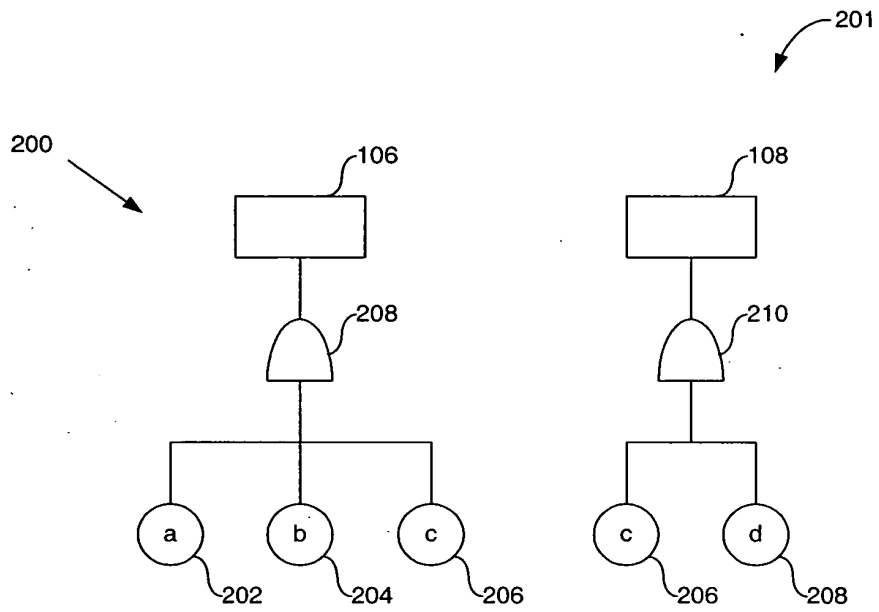


FIG. 2
(Conventional)

FIG. 3 is a block diagram of a system 300 for fault tree analysis. The system 300 includes a Graphical User Interface (GUI) 302, a Common Cause Group Definer 304, a Fault Tree Structure Module 308, a Rule Expansion Module 310, and a central processing unit 306. The central processing unit 306 contains a Fault Tree Definitions Segment 314, a Common Cause Group Definitions Segment, and a Memory component. The GUI 302 is connected to the Common Cause Group Definer 304, the Fault Tree Structure Module 308, and the Rule Expansion Module 310. The Common Cause Group Definer 304 is connected to the Fault Tree Definitions Segment 314. The Fault Tree Structure Module 308 is connected to the Common Cause Group Definitions Segment. The Rule Expansion Module 310 is connected to the Memory component. The system 300 is enclosed in a dashed box 312.

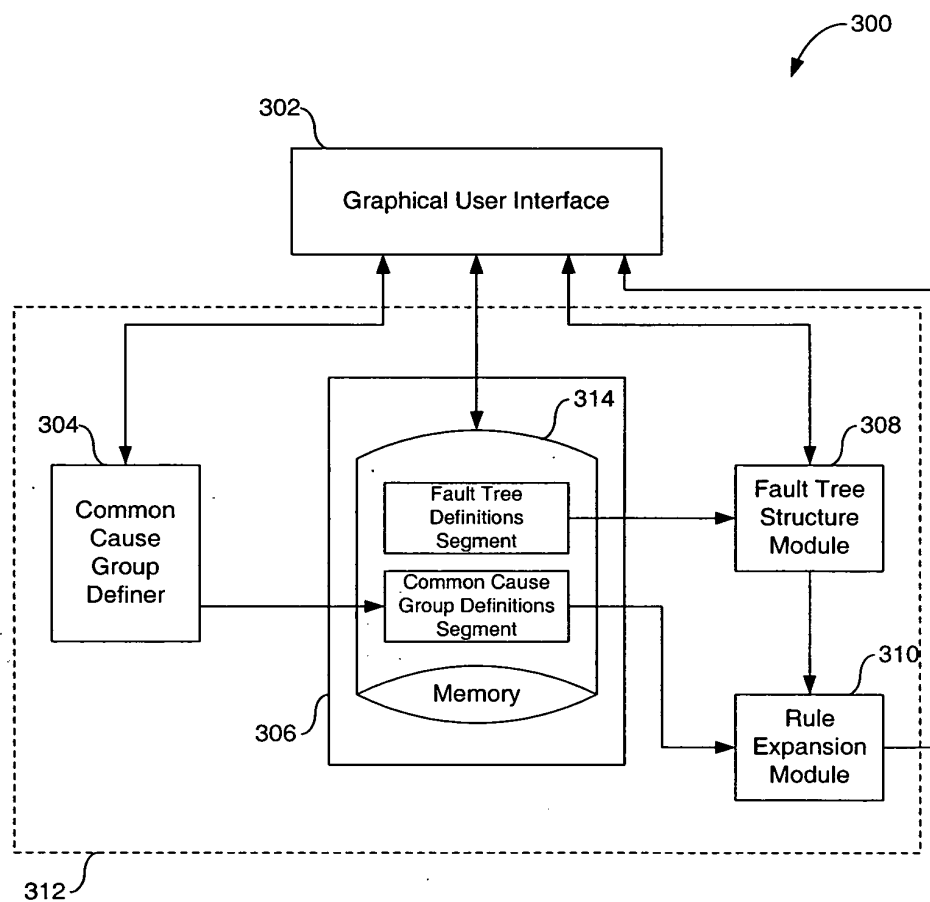


FIG. 3

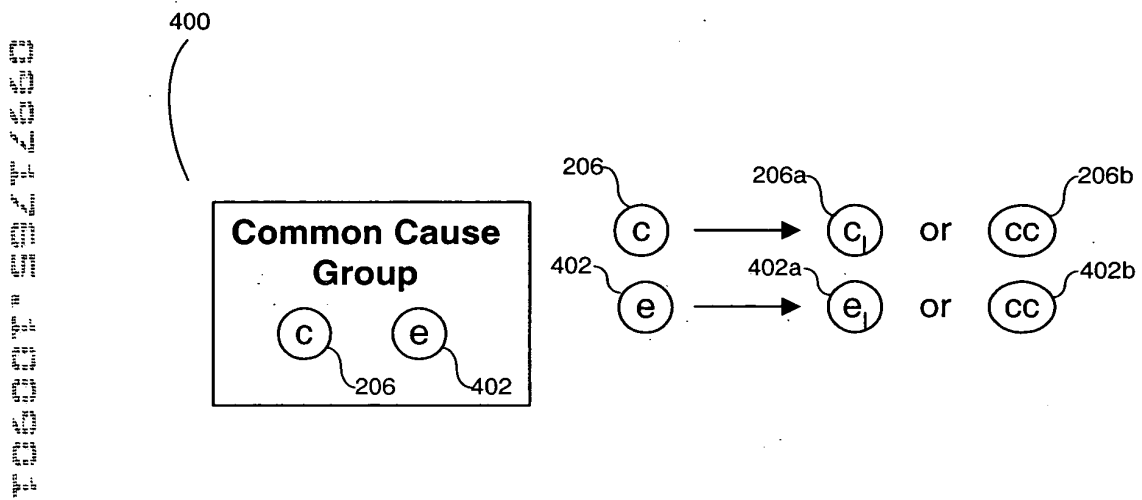


FIG. 4

FIG. 5 is a screenshot of a software interface for managing Common Cause Groups (CCGs). The interface includes a title bar, a menu bar, a toolbar, a list view, and a detail view. The list view displays a table of CCGs, and the detail view shows the selected CCG's information. The interface is labeled with reference numerals 500, 502, 504, and 506.

500

502

Common Cause Group Selection Dialog

ESD Designator: 21

ESD ID	DESIGNATOR	NAME	DESCRIPTION
21	CCF-001A1	CCF-001A1 (A,B,D full exp)	

504

CCGs Filter: ☒ This ESD ☐ All

New Edit Delete

Close

506

FIG. 5

CCG Designator: NewCCG CCG Name: NewCCG

600

602

Create/Edit CCF Group

CCG Designator: NewCCG CCG Name: NewCCG

Description:

Member Basic Events: Available Basic Events

Designator	Name	Description
A5	FULL-001A-IE	
A5	FULL-001B-IE	
A6	FULL-001B-IE	
A6	FULL-001A-IE	
B	CCF-002A2-IE	
B	CCF-002B1-IE	
B	CCF-001B2-IE	
B	CCF-002B2-IE	
B	002B-B	
B	CCF-003A-IE-E	

Designator	Name	Description
C	CCF-001A1-IE-C	
B	CCF-001A2-IE-B	

Next

Exit

604

606

608

FIG. 6

FIG. 7 is a screenshot of a software interface for managing CCF (Cause-Effect Chain) expansions. The interface is titled "CCF - Expansion" and includes a "New CCG" button. The main area is divided into two sections: "Member Basic Events" and "Expansion of the selected basic event to CCFs". The "Member Basic Events" section contains a table with columns "Designator" and "Name". The "Expansion of the selected basic event to CCFs" section contains a table with columns "Designator" and "Name". The interface also includes a "Description" field, a "CCG Designator" field, and a "CCG Name" field. At the bottom, there are "Back", "Next", and "Exit" buttons.

700

702

704

706

708

710

606

CCF - Expansion

New CCG

CCG Designator

CCG Name

Description

Member Basic Events

Designator	Name
C	CCF-001A1-IE-C
B	CCF-001A2-IE-B

708

710

Expansion of the selected basic event to CCFs

Common Cause Events Type

Global Expansion (Beta Factor Model)

Full Expansion (Alpha Factor Model)

Designator	Name
C(1)	CCF-001A1-IE-C-indiv.
CC3(2)	CCF-C.B

706

704

Back

Next

Exit

FIG. 7

File Edit View Options Help
 New Open Recent Print Setup...
 NewCGG NewCGG
 File Edit View Options Help
 New Open Recent Print Setup...

800

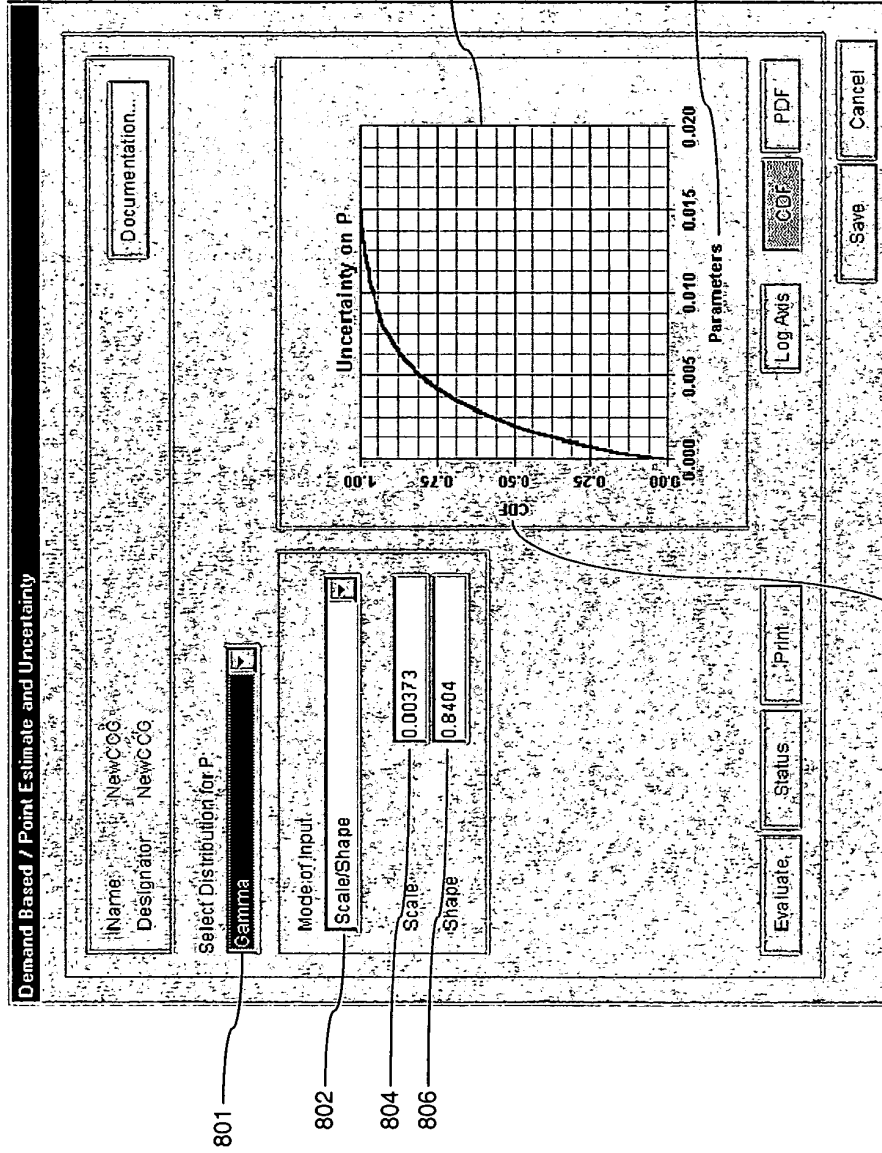


FIG. 8

FIG. 9 is a screenshot of a software interface for quantification parameters, showing a table of parameters and a list of matching CCBs.

900

Q CCF - Quantification Parameters

904 906 908 910 912

CCG Designator: NewCCG CCG Name: NewCCG

Description: NewCCG

CCBE Type: Full Expansion CCB: CCB quantification determined by Alpha Factor

Factors

Factor	Param. A	Param. B	Mean Value	5th	95th
Alfa1	2.1	.4	8.400E-1	4.053E-1	9.998E-1
Alfa2	.03				

902 903

Matching CCBs:

Designator	Name
C(1)	CCF-001A1-IE-C-indiv.
B(1)	CCF-001A2-IE-B-indiv.

914

Number of member basic events: 2

Number of simultaneous events: 1

Probability: 1

Back Finish Exit

FIG. 9

1000
 1001
 1002
 1004
 1006
 1008
 1010
 1012
 1014
 1016

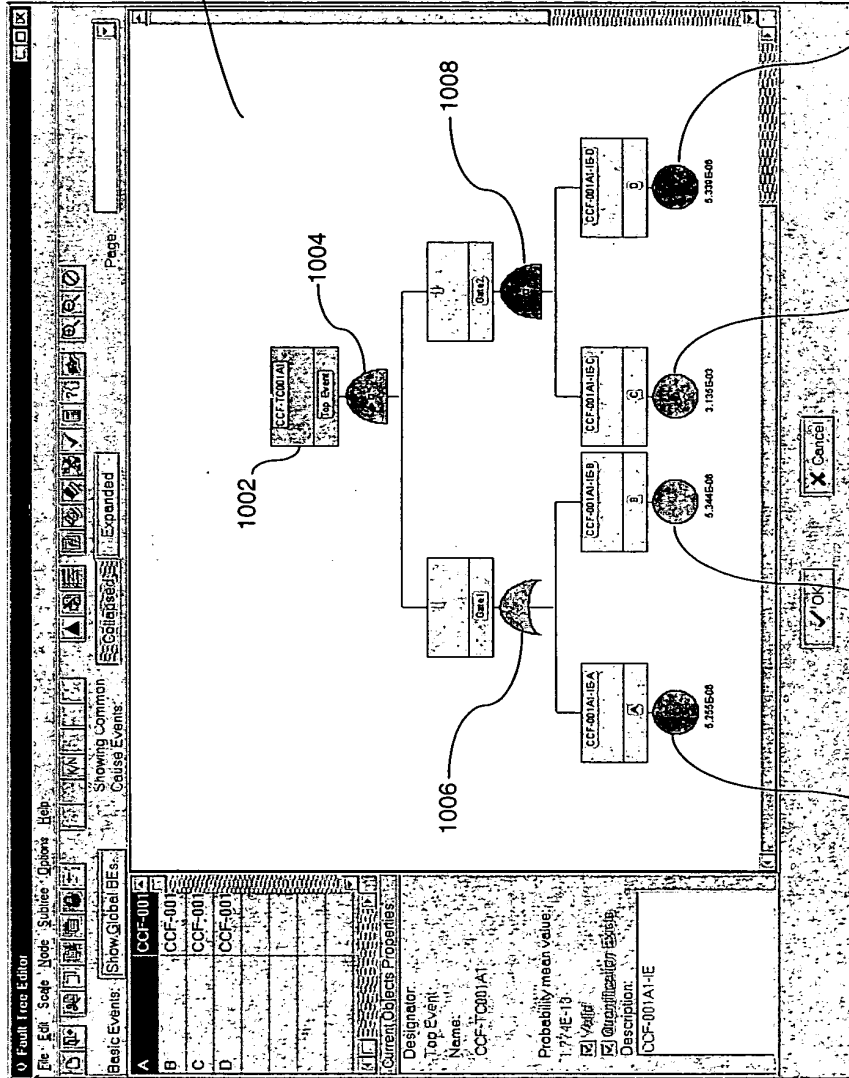


FIG. 10

FIG. 10

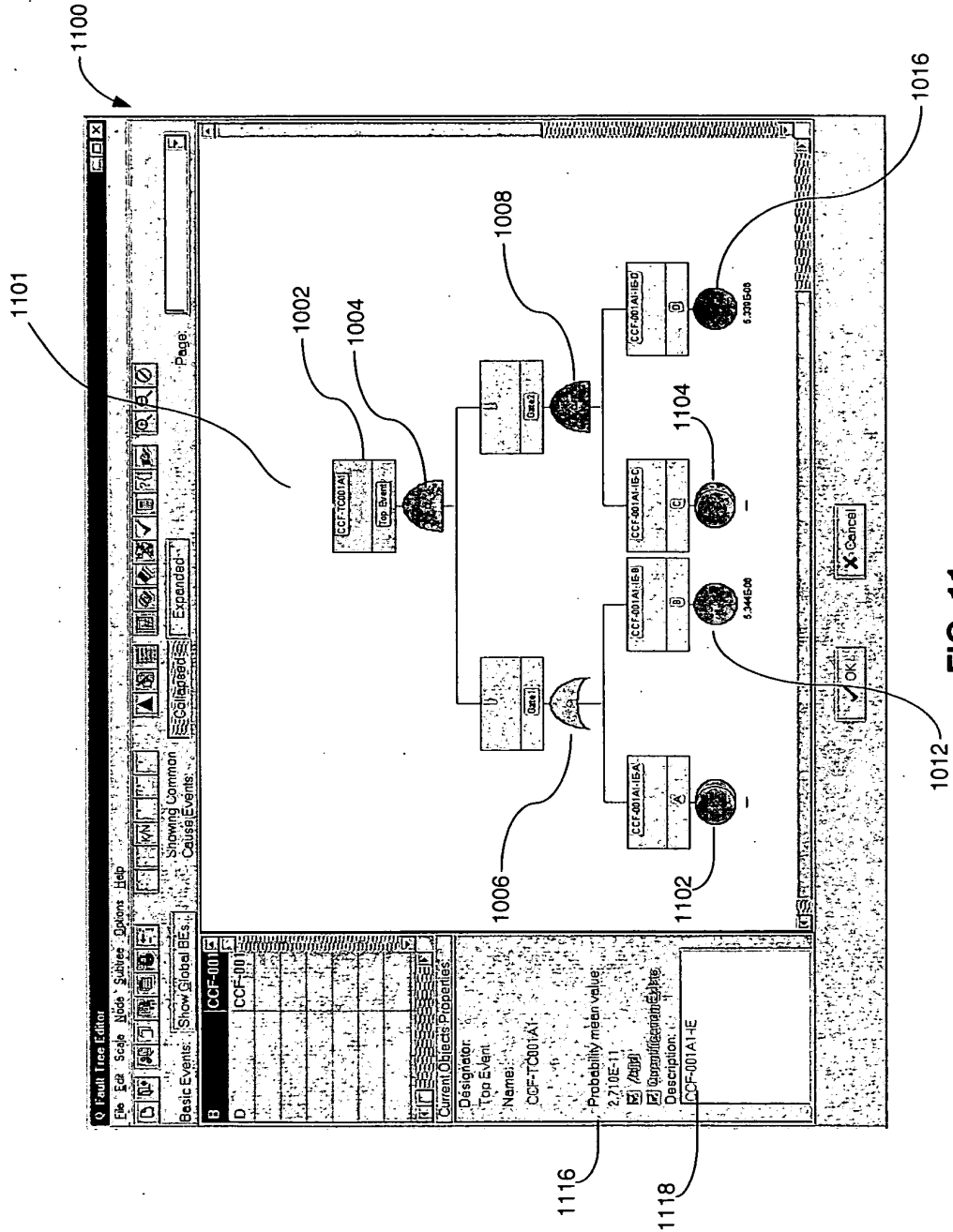


FIG. 11

